

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended) A method operable within a network switch for managing a broadcast tree, said method comprising the steps of:

constructing a pruned broadcast tree by propagation of dynamic cost information packets from edge switches, wherein a dynamic cost information packet is sent by an edge switch and a receiving switch sends back a first acknowledgement packet to the edge switch in response to a first dynamic cost information packet, and wherein the first acknowledgement packet will have a set broadcast learn flag to inform the edge switch that broadcast packets will be transmitted from a particular port of the edge switch, where the particular port has received the first acknowledgement packet with the set broadcast learn flag, where the first acknowledgment packet is used to establish a broadcast path from the edge switch to the receiving switch;

wherein the first acknowledgement packet is used to establish the broadcast path in order to select the lowest latency path for the broadcast path and any subsequent acknowledgement packets are not used to establish the broadcast path;

wherein each dynamic cost information packet includes a cost information determined by a ratio of a port latency value and an available throughput of a port in the edge switch, where the port latency value is equal to a queue depth of data stored in at least one

queue associated with the port divided by a data transfer speed associated with the port of the network switch; and

forwarding received broadcast messages to other network devices in accordance with said pruned broadcast tree.

Claim 2 (original) The method of claim 1 wherein the step of constructing is responsive to exchange of load balancing information between said network switch and other cooperating network devices.

Claim 3 (original) The method of claim 2 wherein the step of constructing includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree include said port for future broadcast messages to an edge switch associated with said port; and

adding said port to said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.

Claim 4 (original) The method of claim 3 wherein the step of constructing further includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree exclude said port for future broadcast messages to an edge switch associated with said port; and

deleting said port from said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.

Claim 5 (original) The method of claim 3 wherein said packet is a cost acknowledgement packet.

Claim 6 (original) The method of claim 1 wherein said network switch is coupled to at least one cooperating network switch in a common load balance domain,

wherein the step of forwarding includes the steps of:
receiving a broadcast message of said broadcast messages on a port of said network switch in said pruned broadcast tree; and
transmitting said broadcast message out all other ports of said network switch which are said pruned broadcast tree.

Claim 7 (original) The method of claim 6 wherein the step of forwarding further includes:

transmitting said broadcast message out other ports of said network switch connected to devices not in said common load balance domain.

Claim 8 (original) The method of claim 1 further comprising the steps of:

sensing failure of a path associated with a port of said network switch on said pruned tree; and
updating said pruned broadcast tree in response to sensing said failure.

Claim 9 (original) The method of claim 8 wherein the step of updating includes the step of:

determining a second port of said network switch which may be used for forwarding of broadcast messages; and
sending a packet out said second port indicative of devices to which broadcast messages may be forwarded via said second port.

Claim 10 (original) The method of claim 9 further comprising the step of:

determining that other network switches depended upon said path of said network switch for broadcast to other devices; and

sending a packet from said network switch to said other switches indicative of said failure of said path.

Claim 11 (currently amended) A network switch including a computer readable storage medium tangibly embodying a method operable within said network switch for managing a broadcast tree, said method comprising the steps of:

constructing a pruned broadcast tree by propagation of dynamic cost information packets from edge switches, wherein a dynamic cost information packet is sent by an edge switch and a receiving switch sends back a first acknowledgement packet to the edge switch in response to first dynamic cost information packet, and wherein the first acknowledgement packet will have a set broadcast learn flag to inform the edge switch that broadcast packets will be transmitted from a particular port of the edge switch, where the particular port has received the first acknowledgement packet with the set broadcast learn flag, where the first acknowledgment packet is used to establish a broadcast path from the edge switch to the receiving switch;

wherein the first acknowledgement packet is used to establish the broadcast path in order to select the lowest latency path for the broadcast path and any subsequent acknowledgement packets are not used to establish the broadcast path;

wherein each dynamic cost information packet includes a cost information determined by a ratio of a

port latency value and an available throughput of a port in the edge switch, where the port latency value is equal to a queue depth of data stored in at least one queue associated with the port divided by a data transfer speed associated with the port of the network switch; and

forwarding received broadcast messages to other network devices in accordance with said pruned broadcast tree.

Claim 12 (original) The switch of claim 11 wherein the method step of constructing is responsive to exchange of load balancing information between said network switch and other cooperating network devices.

Claim 13 (original) The switch of claim 12 wherein the method step of constructing includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree include said port for future broadcast messages to an edge switch associated with said port; and

adding said port to said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.

Claim 14 (original) The switch of claim 13 wherein the method step of constructing further includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree exclude said port for future broadcast messages to an edge switch associated with said port; and

deleting said port from said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.

Claim 15 (original) The switch of claim 13 wherein said packet is a cost acknowledgement packet.

Claim 16 (original) The switch of claim 11 wherein said network switch is coupled to at least one cooperating network switch in a common load balance domain,

wherein the method step of forwarding includes the steps of:

receiving a broadcast message of said broadcast messages on a port of said network switch in said pruned broadcast tree; and

transmitting said broadcast message out all other ports of said network switch which are in said pruned broadcast tree.

Claim 17 (original) The switch of claim 16 wherein the method step of forwarding further includes:

transmitting said broadcast message out other ports of said network switch connected to devices not in said common load balance domain.

Claim 18 (original) The switch of claim 11 wherein the method further comprises the steps of:

sensing failure of a path associated with a port of said network switch on said pruned tree; and

updating said pruned broadcast tree in response to sensing said failure.

Claim 19 (original) The switch of claim 18 wherein the method step of updating includes the step of:

determining a second port of said network switch which may be used for forwarding of broadcast messages; and

sending a packet out said second port indicative of devices to which broadcast messages may be forwarded via said second port.

Claim 20 (original) The switch of claim 19 wherein the method further comprises the step of:

determining that other network switches depended upon said path of said network switch for broadcast to other devices; and

sending a packet from said network switch to said other switches indicative of said failure of said path.

Claim 21-22 (previously cancelled)

Claim 23 (previously presented) The method of claim 1, wherein the dynamic cost information packet includes cost that is updated periodically.

Claim 24-25 (previously cancelled)

Claim 26 (currently amended) The network switch of claim 11, wherein the dynamic cost information packet includes cost that is updated periodically.

Claim 27 (cancelled)

Claim 28 (previously presented) The method of claim 1, wherein the edge switch can receive a second acknowledgment packet subsequently to receiving the first acknowledgment packet, and wherein the second

acknowledgement packet will not include a set broadcast learn flag.

Claim 29 (previously presented) The method of claim 1, further comprising:

in response to a link failure, constructing a new pruned broadcast tree, including receiving a new dynamic cost information packet, removing all broadcast paths to other switches, and sending a new acknowledgement packet in response to the new dynamic cost information packet in order to establish a new broadcast path.

Claim 30 (cancelled)

Claim 31 (currently amended) The ~~method~~ switch of claim 11, wherein the edge switch can receive a second acknowledgment packet subsequently to receiving the first acknowledgment packet, and wherein the second acknowledgement packet will not include a set broadcast learn flag.

Claim 32 (previously presented) The ~~method~~ switch of claim 11, further comprising:

in response to a link failure, constructing a new pruned broadcast tree, including receiving a new dynamic cost information packet, removing all broadcast paths to other switches, and sending a new acknowledgement packet in response to the new dynamic cost information packet in order to establish a new broadcast path.

Claim 33 (new): The method of claim 1, further comprising:

after receiving, by the edge switch, the first acknowledgement packet with the broadcast learn flag that is set, placing the particular port, for a MAC (Media Access) address of the edge switch, in the pruned broadcast tree.

Claim 34 (new): The switch of claim 11, wherein the method further comprises:

after receiving, by the edge switch, the first acknowledgement packet with the broadcast learn flag that is set, placing the particular port, for a MAC (Media Access) address of the edge switch, in the pruned broadcast tree.

Claim 35 (currently amended) A method operable within a network switch for managing a broadcast tree, said method comprising the steps of:

constructing a pruned broadcast tree by propagation of dynamic cost information packets from edge switches, wherein a dynamic cost information packet is sent by an edge switch and a receiving switch sends back a first acknowledgement packet to the edge switch in response to a first dynamic cost information packet, and wherein the first acknowledgement packet will have a set broadcast learn flag to inform the edge switch that broadcast packets will be transmitted from a particular port of the edge switch, where the particular port has received the first acknowledgement packet with the set broadcast learn flag, where the first acknowledgment packet is used to establish a broadcast path from the edge switch to the receiving switch; and

wherein each dynamic cost information packet includes a cost information determined by a ratio of a

port latency value and an available throughput of a port in the edge switch, where the port latency value is equal to a queue depth of data stored in at least one queue associated with the port divided by a data transfer speed associated with the port of the network switch.

Claim 36 (new): The method of claim 35, further comprising:

forwarding received broadcast messages to other network devices in accordance with said pruned broadcast tree.

Claim 37 (new) The method of claim 35 wherein the step of constructing is responsive to exchange of load balancing information between said network switch and other cooperating network devices.

Claim 38 (new) The method of claim 37 wherein the step of constructing includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree include said port for future broadcast messages to an edge switch associated with said port; and

adding said port to said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.

Claim 39 (new) The method of claim 38 wherein the step of constructing further includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree exclude said port for future broadcast messages to an edge switch associated with said port; and

deleting said port from said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.

Claim 40 (new) A network switch including a computer readable storage medium tangibly embodying a method operable within said network switch for managing a broadcast tree, said method comprising the steps of:

constructing a pruned broadcast tree by propagation of dynamic cost information packets from edge switches, wherein a dynamic cost information packet is sent by an edge switch and a receiving switch sends back a first acknowledgement packet to the edge switch in response to first dynamic cost information packet, and wherein the first acknowledgement packet will have a set broadcast learn flag to inform the edge switch that broadcast packets will be transmitted from a particular port of the edge switch, where the particular port has received the first acknowledgement packet with the set broadcast learn flag, where the first acknowledgment packet is used to establish a broadcast path from the edge switch to the receiving switch; and

wherein each dynamic cost information packet includes a cost information determined by a ratio of a port latency value and an available throughput of a port in the edge switch, where the port latency value is equal to a queue depth of data stored in at least one queue associated with the port divided by a data transfer speed associated with the port of the network switch.

Claim 41 (new): The network switch of claim 40, wherein the method further comprises:

forwarding received broadcast messages to other network devices in accordance with said pruned broadcast tree.

Claim 42 (new) The switch of claim 40 wherein the method step of constructing is responsive to exchange of load balancing information between said network switch and other cooperating network devices.

Claim 43 (new) The switch of claim 42 wherein the method step of constructing includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree include said port for future broadcast messages to an edge switch associated with said port; and

adding said port to said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.

Claim 44 (new) The switch of claim 43 wherein the method step of constructing further includes the steps of:

receiving a packet on a port within said network switch wherein said packet includes indicia requesting that said pruned broadcast tree exclude said port for future broadcast messages to an edge switch associated with said port; and

deleting said port from said pruned broadcast tree for broadcast of messages to said edge switch in response to receipt of a first said packet.